

REMARKS

Claim 11 stands rejected under 35 U.S.C. §102(e) for anticipation by U.S. Patent No. 6,392,726 to Goto et al. (hereinafter "Goto"). Claim 11 has been amended to incorporate the limitations of prior claim 15. This rejection of claim 11 is now moot.

Claims 15, 39 and 40 stand rejected under 35 U.S.C. §103(a) for obviousness over the Goto patent in view of U.S. Patent No. 5,838,403 to Jannson et al. (hereinafter "Jannson"). Claims 12, 13, 20 and 35 are rejected under 35 U.S.C. §103(a) for obviousness over U.S. Patent No. 5,587,816 to Gunjima et al. (hereinafter "Gunjima") in view of the U.S. Patent No. 6,443,579 to Myers (hereinafter "Myers"). Claims 14, 36, 37 and 41 are rejected under 35 U.S.C. §103(a) for obviousness over the Gunjima patent in view of the Jannson and Goto patents. Applicants respectfully traverse these rejections for the following reasons.

While detailed below in reference to each prior art rejection, the following features are so clearly lacking in the cited references that they bear listing here:

- Surface of an LCD display having surface relief or texturing to eliminate or reduce reflections (claims 11, 12, 20). The "reflections" are those resulting from ambient light.
- A pair of plates superimposed on a planar surface of another plate in an LCD cell, where the underside of the other plate has a Fresnel structure coated with semi-reflective or transfective material (claim 39).
- An LCD cell having a pair of plates superimposed on a planar surface of a composite plate, the composite plate including an upper body and a lower body. The upper body upper planar surface is parallel to the lower body's lower surface, while their mating surfaces are stepped/ramped and conform with each other. The upper body's lower stepped/ramped surface includes a semi-reflective coating (claim 40).

These features, as well as numerous others, are not suggested by the prior art of record.

In the rejection of claims 15, 39 and 40, the Office Action asserts that the Goto patent teaches an LCD device with a light-transmitting layer having surface relief or texturing that eliminates or reduces reflections. The Jannson patent is relied upon for teaching a light-transmitting layer for an LCD with refractive index variations to impart diffusing properties to the material.

Applicants traverse this rejection of the subject matter of prior claim 15, now present in amended claim 11. The lenticular surface 54a shown in Fig. 5 of the Goto patent is not a layer having "surface relief or texturing to eliminate or reduce reflections" as required in amended claim 11. The surface from which reflections are eliminated or reduced is the viewing surface, closest to the viewer. Goto has no teaching to reduce or eliminate reflections from surface 54a. Instead, the lenticular surface 54a diffuses rays of light produced by the projector 11. See the arrows within the liquid crystal plate 54 and the arrows exiting the liquid crystal 51. The lenticular surface 54a diffuses light exiting the liquid crystal plate 54. The lenticular surface is distinct from a surface that reduces or eliminates reflections from ambient light emanating from the location of a viewer. The Jannson patent does not account for the deficiencies in the Goto patent. In particular, the embodiment shown in Fig. 11 in the Jannson patent includes a waveguide 170 covered by a diffuser 180. The LCD display claimed in amended claim 11 requires a light-transmitting layer with one side having surface relief or texturing that eliminates or reduces reflections (i.e., from ambient light) with the layer also having refractive index variations that impart light diffusing properties to the layer. The lenticular surface 54a of Goto diffuses light passing through the liquid crystal 51. Jannson likewise teaches a diffuser 180 closest to the viewer. However, neither reference provides any motivation to include a surface with relief or texturing that eliminates or avoids reflection. Accordingly, amended claim 11 is believed to define over the combination of the Goto and Jannson patents.

Claim 15 has been amended to require that the refractive index variations are columnar. As discussed on page 9 of the specification, the refractive index may be constant along a line perpendicular to the plane of the sheet, i.e., is columnar. Such refractive index variations described in EP 0294122 are described

in the present application. No new matter has been added. The prior art of record fails to teach or suggest such a columnar refractive index variation. Accordingly, amended claim 15 is believed to define over the prior art of record.

Claims 39 and 40 are each directed to an LCD display having an LCD cell with upper and lower transparent plates superimposed upon another plate of light-transmitting material (claim 39) or a composite plate of partially light-transmitting material (claim 40). Incident light on the LCD display directed at an angle perpendicular to the upper and lower plates passes through the LCD cell and is reflected by semi-reflective or transflective material on the light-transmitting or partially light-transmitting material. See the embodiment shown in Fig. 6 of the present application. The incident light is shown as being reflected by a reflective layer 104. The Office Action relies on Fig. 6 of Goto that depicts a pair of transparent plates 63 and 67 superimposed on a transparent base plate 62 and a Fresnel lens 13. The back surface of the Fresnel lens 13 apparently is equated with the claimed "planar upper face parallel with the upper and lower plates of the LCD cell" in claim 39. As such, there is no Fresnel lower surface. Even though Goto teaches away from a Fresnel lower surface of a plate on which the two transparent plates are superimposed, the Office Action looks to the Jansson patent for supposedly teaching that the light-diffusing material in Fig. 12 of the Jansson patent with a Fresnel lower surface (element 170 shown in Fig. 11) has a semi-reflective or transflective coating. The underside of the Fresnel lower surface of the waveguide shown in Fig. 12 has no semi-reflective or transflective coating. Moreover, the light used in the embodiment shown in Fig. 12 of the Jansson patent is from a light source within the display; it is not ambient light. Fig. 12 shows no light entering from the top of the display which could be considered to be ambient light. The arrows and angles which are shown at the top of Fig. 12 are all showing light exiting the display. Element 150 shown in Fig. 11 is referred to as being a lightguide, however, the waveguide 170 has no indication of containing any light reflecting or transflecting properties. There is no suggestion from these two references to invert the Fresnel lens 13 of Goto; that would destroy the purpose of the lens 13. Moreover, neither reference suggests using a semi-reflective or transflective coating on a Fresnel

surface. To the extent that the slanted lines on the underside of waveguide 150 in Fig. 12 of Jannson indicate a reflective property, there is no reason to modify the Fresnel lens 13 of Goto with a reflective surface. Accordingly, claim 39 defines thereover.

Several limitations of claim 40 are not addressed in the Office Action, including at least: (1) a composite partially light-transmitting, partially light-reflecting plate onto which the pair of transparent plates are superimposed, with (2) a semi-reflective coating on an underside of a first body of the composite plate, (3) a second body conforming to the underside of the first body with the upper surface of the first body being parallel to the lower surface of the second body. No such structures are present in either of the Goto or Jannson patents; claim 40 defines thereover.

The rejection of claims 12, 13, 20 and 35 relies on the Gunjima patent for assertedly showing an LCD and the Jannson patent for disclosing a light-transmitting layer with one side having surface relief and the other side being ramped in a Fresnel arrangement. Again, the Office Action asserts that the Jannson patent teaches a light-transmitting layer in Fig. 12, with surface relief on one side and a Fresnel arrangement on the other side. It has already been established on the record that the Gunjima patent fails to disclose a light-transmitting layer having one side with surface texturing and an opposing side that is stepped or ramped. (The Office Action refers to the layers "20, 21" of the polarized light separator of Fig. 4, which is presumed to refer to layers 22 and 21.) To account for this deficiency, the Office Action cites Jannson which, as noted above, discloses a light-transmitting layer having one side which is stepped or ramped in a Fresnel arrangement. An upper layer of the light-transmitting layer shown in Fig. 12 of Jannson has some surface features. As discussed above, element 180 (having surface features) of the Jannson patent diffuses light generated within the display and exiting the display. It does not reflect ambient light. The reflections which are controlled in the LCD display of claim 12 are those produced at the surface of the LCD from ambient light. See page 13 of the present application. Any light-diffusing properties present in the diffuser 180 shown in the Jannson patent are created in order to diffuse light contained within the display. There is nothing in the Jannson patent that suggests

texturing or applying surface relief to the exposed side of the display to eliminate or reduce reflections; these reflections being understood to be surface reflections from the face of the display. Accordingly, claims 12, 13, 20 and 35 define over the combination of these references. In addition, claims 13 and 35 require that the stepped or ramped side of the layer (having surface relief or texturing on the opposing side) is reflective or semi-reflective. While this feature of claims 13 and 35 was not even addressed in the Office Action, nowhere is there any teaching in either the Gunjima or Jannson patents for applying a reflective or semi-reflective coating to the underside of a Fresnel refracting arrangement. Therefore, claims 12, 13, 20 and 35 define thereover.

The rejection of claims 14, 36, 37 and 41 relies upon these same supposed teachings of the Gunjima and Jannson patents and also relies on the Goto patent for assertedly showing an LCD with convexly or concavely curved portions on a ramped or stepped side of a light-transmitting layer. In addition to the clear lack of teachings in the cited references to somehow produce the LCD display required in the respective base claims 12 and 20 and in claim 41, the Goto patent only discloses a curved lenticular surface. Those lenses are not formed on a stepped or ramped side of a light-transmitting layer as required by claims 14 and 36. In fact, the curved lenticular surface shown in the Goto patent is the surface closest to the viewer and is distinct from the Fresnel lens. As such, claims 14 and 36 clearly define over the combination of these references. In claim 37, the Office Action asserts it would be obvious to include a light-transmitting layer with refractive index variations as supposedly taught by Fig. 12 of the Jannson patent. Claim 37 includes all the limitations of claim 20. As noted previously, the references do not suggest an LCD with a plate having one surface textured to reduce reflections and an opposite surface with Fresnel structures (per claim 20), much less to include refractive index variations in that plate, per claim 37. Accordingly, claim 37 defines over the prior art of record.

In rejecting claim 41, the Office Action relies upon the Gunjima patent for disclosing an LCD with two light-transmitting materials at column 21, lines 6-14. That passage only teaches using an adhesive with the same refractive index as the

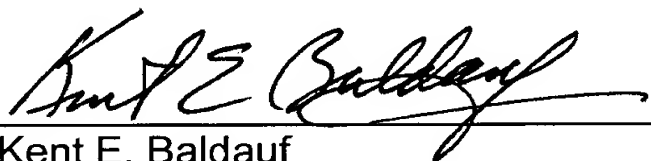
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lightguide. The second body recited in claim 41, which is of the same refractive index as the first body, has an upper surface which conforms to the underside of the first body and has a lower planar surface. Clearly, such a layer having a lower planar surface and an upper stepped or ramped surface is distinct from the adhesive layer disclosed in the Gunjima patent. As such, claim 41 defines over the prior art of record.

In view of the foregoing, allowance of claims 11-15, 20, 35-37 and 39-41 is respectfully requested.

Respectfully submitted,

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